Portfolio replication and least squares Monte Carlo with application to insurance risk management

Assertions (Stellingen)

Accompanying the thesis

Portfolio Replication and Least Squares Monte Carlo with Application to Insurance Risk Management

by

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1. Least Squares Monte Carlo (LSMC) with Regress-Later has so far received unnecessarily little attention in the academic literature. After all, convergence rates faster than at rate N^{-1} can be attained with Regress-Later. In contrast, LSMC with Regress-Now can never converge faster than at rate N^{-1}.
   (Chapter 2)

2. Portfolio Replication is nothing else than LSMC, but with a slight twist: regression takes place at the end of the time interval rather than across the time interval.
   (Chapter 3)

3. Convergence to the payoff function in portfolio replication implies convergence to the conditional expectation function.
   (Chapter 3)

4. The Replicating Portfolio technique can be extremely challenging when it comes to replicating path-dependent life insurance liabilities. But at least, you get direct feedback on the quality of the approximation. With LSMC (Regress-Now) you always approximate something, but that may well be the wrong thing.
   (Chapter 4)

5. An insurance solvency ratio gets quite some attention. Small movements in the solvency ratio tend to get a bit over-interpreted: after all, we are talking about an estimator.

6. One should not forget: insurance means taking on risks. Insurance products that are perfect from a risk management perspective may not excite customers.

7. Risk models are sometimes like magic: you put something in a black box and something unexpected comes out.

8. There is an unbelievable great pleasure in finishing calculations that finally work out.

9. The best hedging strategy in life is Kung Fu: Hard work pays off.

10. Practitioners often favour LSMC (Regress-Now) over portfolio replication using the argument that portfolio replication cannot account for non-market risk factors. This is simply not true, non-market risk factors can very well be accounted for in portfolio replication.